Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

[In binding the bulletins for 1901 pages 1-8 at the end of this Bulletin should be detached and placed before Bulletin 70, which begins with page 9.]

Maine Agricultural Experiment Station

BULLETIN No. 78. DECEMBER, 1901.

FINANCES, METEOROLOGY, INDEX.

This Bulletin contains the newspaper bulletins published in 1901, the acknowledgment of gifts to the Station in 1901, the summary of the meteorological observations, the Report of the Treasurer, and the index for the bulletins issued in 1901. Bulletins 70 to 78 make up the Seventeenth Annual Report of the Station.

Requests for the Bulletins should be addressed to the
AGRICULTURAL EXPERIMENT STATION,
Orono, Maine.

MAINE
AGRICULTURAL EXPERIMENT STATION
ORONO, MAINE.

THE STATION COUNCIL.

PRESIDENT ABRAM W. HARRIS	*President*
DIRECTOR CHARLES D. WOODS	*Secretary*
EDWARD B. WINSLOW, Portland	*Committee of Board of Trustees*
VORANUS C. COFFIN, Harrington	
JOHN A. ROBERTS, Norway	
B. WALKER MCKEEN, Fryeburg	*State Board of Agriculture*
EUGENE HARVEY LIBBY, Auburn	*State Grange*
CHARLES S. POPE, Manchester	*State Pomological Society*
JAMES M. BARTLETT	*Members of the Station Staff*
LUCIUS H. MERRILL	
FREMONT L. RUSSELL	
WELTON M. MUNSON	
GILBERT M. GOWELL	
GILMAN A. DREW	

THE STATION STAFF.

THE PRESIDENT OF THE UNIVERSITY.

CHARLES D. WOODS	*Director*
JAMES M. BARTLETT	*Chemist*
LUCIUS H. MERRILL	*Chemist*
FREMONT L. RUSSELL	*Veterinarian*
WELTON M. MUNSON	*Horticulturist*
GILBERT M. GOWELL	*Stock Breeding and Poultry*
GILMAN A. DREW	*Zoologist*
LUCIUS J. SHEPARD	*Assistant in Agriculture*
ORA W. KNIGHT	*Assistant Chemist*
EDWARD R. MANSFIELD	*Assistant Chemist*
CLIFFORD D. HOLLEY	*Assistant Chemist*
HERBERT W. BRITCHER,	*Assistant Zoologist*

NEWSPAPER BULLETINS PUBLISHED IN 1901.

CHAS. D. WOODS.

Whenever there is matter of importance which we wish to bring promptly to the attention of the people of the State, we make as clear and concise a statement as possible in the style and type of a newspaper column and mail it as a "Special Newspaper Bulletin" to all the press of the Station exchange mailing list. These Newspaper Bulletins are quite generally printed by the papers and the Station is under obligations to the press for this opportunity of specially and promptly being put in touch with the people.

During the year the Station has issued several special newspaper bulletins on miscellaneous subjects and 12 monthly meteorological bulletins. The results of the meteorological observations thus reported are summarized beyond. The matter of three of the newspaper bulletins has not appeared in any of the regular bulletins of the Station and is therefore here reprinted as a matter of permanent record.

THE COLORADO POTATO BEETLE.

Effects of poisons with and without Bordeaux mixture on badly infested fields.

In a series of experiments in 1901 it was found that three applications of Paris green at the rate of one-half pound to the acre is sufficient to keep the vines free from the Colorado potato beetle, provided the sprayings are made at such times as to have the poison on all the foliage when the bugs first hatch.

Every year many potato growers wait until the vines are well covered with the bugs before beginning to fight them, and then the Station is in receipt of letters of complaint against the quality of the poisons, and requests for analysis. As this condition of eaten vines covered with bugs is ever recurring, it was decided to make a test of the effect of different amounts of poison upon the bugs on a badly infested field. Since it was thought the presence of the copper salts in Bordeaux mixture might affect the results, the poisons were used both with and without Bordeaux mixture. As no practical remedy other than arsenic has thus far been found for the potato beetle, arsenite of copper (Paris green) and arsenate of lead were used.

The field selected contained 15 to 20 acres. The bugs were very numerous and some of the vines were badly eaten. The poisons were applied with a mechanical 4-rowed sprayer fitted with a powerful pump and double Vermorel nozzles. A barrel of each mixture was so applied as to cover a little more than one acre. The Paris green was applied at the rate of ½, 1, 2 and 3 pounds per barrel of 50 gallons, both with and without Bordeaux mixture. The arsenate of lead was applied at the rate of 1, 2 and 3 pounds per barrel, both with and without Bordeaux mixture.

Where Paris green was used with the Bordeaux mixture, lime was added at the rate of 3 pounds to the barrel in order to prevent the burning of the foliage. While arsenate of lead does not burn the foliage, the lime was applied with it in order that the methods of application of the poisons should be comparable.

Because the center of the field was more badly infested than either end, the spraying was begun with both Paris green and arsenate of lead from the center. Plot "A" was at the extreme north of the field and plot "O" was at the extreme south. In reporting below these are arranged in accordance with the kinds and amounts of poisons used rather than in the arrangement in the field.

The poisons were applied on the morning of Tuesday, July 9. Late in the afternoon of July 10th, there was a heavy shower. The observations were made early Friday morning, July 12th. The arrangement and treatment of plots follow:

(F). ½ lb. Paris green; 3 lbs. lime. A good many bugs still left on some plants. Some badly eaten plants cleaned from bugs; other still badly infested.

(G). 1 lb. Paris green; 3 lbs. lime. Some bugs still left. An occasional plant badly infested. Cleaner than F.

(H). 2 lbs. Paris green; 3 lbs. lime. No cleaner than G.

(I). 3 lbs. Paris green; 3 lbs. lime. Quite free from bugs. Only a few on occasional plants.

(K). ½ lb. Paris green; Bordeaux mixture. Very few bugs.

(L). 1 lb. Paris green. Bordeaux mixture. Much the same as K.

(M). 2 lbs. Paris green; Bordeaux mixture. Not quite as clean as L and K.

(N). 3 lbs. Paris green; Bordeaux mixture. Not as clean as M, L, or K.

(E). (This plot lies next to F in the field). 1 lb. arsenate of lead; 3 lbs. lime. Quite clean.

(D). 2 lbs. arsenate of lead; 3 lbs. lime. Rather better than E.

(C). 3 lbs. arsenate of lead; 3 lbs. lime. Not as clean as D or E.

(B). 1 lb. arsenate of lead; Bordeaux mixture. Better than C. About the same as E.

(A). 2 lbs. arsenate of lead; Bordeaux mixture. Very clean; about the same as D.

(O). (In the field, this plot lies next to N). 3 lbs. arsenate of lead; Bordeaux mixture. Very clean; much cleaner than K, L, M or N.

From the above it is seen that Paris green with Bordeaux mixture was more effective than Paris green without the Bordeaux. It was expected that the result would be otherwise, as in other cases the bugs seemed to dislike and avoid the copper salts as far as possible. It is probable that Wednesday's shower washed off the Paris green when applied with white wash (lime) but did not affect it as much when it was applied with Bordeaux mixture.

The arsenate of lead seemed to kill equally as well whether applied with lime or with the Bordeaux mixture. This can probably be explained by the fact that arsenate of lead when once dried is with difficulty washed from the foliage. The arsenate of lead killed better than did the Paris green. This may be explained by the washing off by the shower of the Paris green both with and without Bordeaux mixture.

One-half pound of Paris green or 1 pound of arsenate of lead applied with the Bordeaux mixture was effective in cleaning the badly infested field from the great majority of the bugs. When plants are making as rapid growth as were these potatoes (each stem growing about an inch a day), it is impossible with one application to entirely free them from bugs, because there will always be new leaves for the bugs to crawl onto and feed upon.

In the opinion of the writer, in order to kill potato bugs with poisons, there are two important things to be observed. First, the poison must be as evenly distributed as possible over the entire plant; and in the case of infested fields, the first application must be followed in one or two days by a second application in order to kill the bugs on the new foliage.

FEEDING STUFFS INSPECTION LAW.

Another instance of low grade cotton seed meal excluded from Maine markets.

The best laws are those which operate so quietly that the public is likely to doubt their necessity or even to forget their existence. It is only occasionally that an open and conspicuous violation of our statutes calls for their full and prompt enforcement and satisfactorily demonstrates their effectiveness.

Since the enactment of the law regulating the sale of concentrated commercial feeding stuffs, it has occasionally, but decreasingly, been said that the law is of no value. In the publications of the Station the opposite of this position has been taken, and evidence has from time to time been submitted to prove the value of the law and the wisdom of the legislature that enacted it. A recent instance of its working, in ways not generally appreciated, is of interest and importance since it indicates also a desire on the part of the large handlers of feeding stuffs to conform to the law and to give their customers high grade goods.

It has been many months since the Station has received a sample of low grade cottonseed meal, either from correspondents or through its inspectors; but a week ago a sample of bright cottonseed meal of good color and mechanical condition was received from one of the largest jobbing houses in the State with the request that it be analyzed. Accordingly the protein and fat were determined and the following letter written:

"The sample of cottonseed meal which you sent us carries 22.44 per cent. protein and 6.48 per cent. fat. There is apparently some coloring matter added to conceal the cotton hulls which are ground with the sample. After extracting with ether, which we do in estimating the fat, the meal instead of being yellow, like the original sample, is nearly black.

"This is the poorest cottonseed that we have seen in this State for a good many months. I trust that you are not intending to offer it for sale at any price. I should be pleased to know the history of the sample. There is no charge for the analysis."

The reply received was as follows:

"Yours of September 18th received. The cottonseed meal was sent to us by a New York party who wished us to handle the product of the mill. We requested, for the first thing we did, to send us the analysis of it which they failed to do, but they still kept trying to make arrangements with us to handle their meal. We at last requested them to send us a large sample, which we immediately sent you for analysis and now that we have found it so poor, we certainly shall not handle any of it, and shall make sure that none of our competitors do.

"We do not handle any meal that runs less than 43 per cent. protein, and we intend to and try to buy all the meal that we can that contains a higher per cent."

The law has resulted in the education of the dealer so that he has knowledge of the feeding value of the goods he handles. While as a whole, feed dealers have always been anxious to give full value in the goods they sell, the feeding stuffs law enables them to know the quality of the materials they handle, not only from their appearance but from their chemical composition.

As soon as the winter stock of feeding stuffs are in the market, the Station representatives will draw samples for analysis. The results cannot be published and ready for distribution until January or February. In the meantime if the feeders desire to know the quality of the goods they are using, or dealers what they are selling, a two ounce sample sent to the Station (preferably in tin or glass) will be promptly analyzed and the results reported to the correspondent without cost to the sender. Such co-operation will materially add to the effectiveness of the law.

THE CHINCH BUG.

Damage in western Maine. Description and remedies.

The chinch bug is a blackish insect, from one-eighth to one-sixth of an inch long, and about one-twentieth of an inch broad. When disturbed it emits a characteristic "stinkbug" odor. Two forms may be distinguished according to the length of the wings, which are white and thin, almost like tissue paper. The long winged form has wings covering the whole of the abdomen or back and colored at the center of each outer edge by a black diamond shaped spot. The short winged form has wings reaching only about half the length of the abdomen and looking like a short, whitish letter X laid on the middle of the back. Both of these forms hide during the winter in favorable places. and during warm weather in spring, probably the latter part of May or early June, make their way to places suitable for laying their eggs. These are whitish in color, about the size of the eye of a fine needle, and are laid among the roots and bases of the stems of grass and grain. Each female bug may lay during two or three weeks from 300 to 500 eggs. These hatch out in about two weeks and the young reach maturity about four weeks later, working in the meantime about the roots of the grass. The older larvae and the adults work usually on the stems of the plants, sucking the sap and thus causing the plants to wither and finally to die.

Complaints received at the Experiment Station during the summer indicated that the chinch bugs were doing considerable damage to the grass crop in western Maine. An examination by the assistant zoologist of the station into the conditions existing in the town of Fryeburg during the latter part of September showed that the chief injury was to timothy and hungarian grass, although corn and oats were in some instances attacked, as was also witch grass and barn grass. Timothy was completely killed over areas varying in size from a few square yards to others of several acres. In some instances clover and witch grass had grown up in these spots. Barn grass growing among corn was completely killed and witch grass was killed to the ground, but grew up again as the bugs passed outward.

Although the damage for this year had ceased, the bugs were easily found; in one case clustering in large numbers under the dead leaves, stems and other debris among the clover immediately bordering a spot on which the timothy had been killed; in another case crowding among and about the clumps of beard grass and sedge grass bordering a strip of hungarian grass. In such places as these and under dead grass and weeds about fence corners and fields; under manure spread in the fall and not plowed under; in masses of dead leaves, bark or brush heaps, and rubbish of all sorts, the bugs pass the late fall and winter months, lying apparently dead during cold weather, but quickly coming into activity during the warm days of late spring.

As the amount of injury next year will depend largely on the number of bugs which winter over safely, it is important that pains be taken to destroy as many as possible before the ground is covered with snow. The following methods are probably the best for the State of Maine.

1st. Burning. Where there is considerable clover mixed with the hungarian or timothy, the bugs are very likely to winter over beneath the clover which borders for a few feet or yards immediately upon the spot where they have stopped injuring the grass. If such a strip be mowed closely by hand and allowed to dry for a few days it may be burned over and quantities of the bugs will be killed. If this burning be done after the ground has frozen, little, if any, injury will be done to the crop. All rubbish such as dried grass and weeds along the edges of fields, brush heaps, dead leaves, bark and chips, clumps of wild grasses, sedge grasses etc., in near by fields should be burned as completely as possible.

2d. Spraying. Chinch bugs are quickly killed by kerosene or kerosene emulsion, but it is essential that it be thoroughly applied. The bugs are so protected by the clover and grass that it is almost impossible to reach them by ordinary spraying. Sprinkling freely over the infested spots will usually be effectual but will probably kill the grass also. Clumps of sedge or wild grass in which careful examination shows the bugs to be abundant might be sprinkled thoroughly with kerosene and then burned, thus killing bugs which had crowded deep down among the bases of the plants, where the flames alone might not reach them.

3d. Plowing. Where bugs are found in considerable numbers at the edges of spots which they have eaten over, they may be destroyed by plowing under the strip in which they are hiding. Deep plowing, however, is necessary, followed by dragging and rolling in order to completely cover under all vegetation and close up all holes or passages through which the bugs might make their way to the surface.

If used promptly and thoroughly, these methods are also applicable when the bugs are found to be working during early summer and are all the more effective because the bugs do not scatter over the whole field but stay together in comparatively small areas or strips, and if they are promptly killed over such patches further injury for the season will be very much lessened.

ACKNOWLEDGMENTS.

Acknowledgment is hereby made for the following gifts to the Station during 1901:

Seeds, plants, cuttings and samples of food materials.—United States Department of Agriculture.

Cuttings and Seeds.—Cornell University, Ithaca, N. Y.

Nitrate of soda.—Propaganda for the Use of Nitrate of Soda, New York City.

Sulphate, Carbonate and Muriate of Potash and Kainit.—German Kali Works, New York City.

Disparene, Bodo, Dry Bordeaux Mixture and Creosote Emulsion.—Bowker Chemical Company, Boston.

Dog Bane, dry for an insecticide.—Comisión de Parasitología Agrícola, City of Mexico, Mexico.

Aroostook Power Sprayer for Potatoes.—Field Force Pump Company, Lockport, N. Y.

Orchard Lamp for moths.—A. F. Severance, Nobleboro, Maine.

Lincoln Dip and Lincoln Disenfectant.—Pasteur Vaccine Company, Chicago.

Cyphers Anti Fly Pest—Cyphers Incubator Company, New York City.

Alderney Butter Color—Heller and Merz Co., New York City.

Sugar Feed—Conover & Co., Minneapolis, Minn.

Peep O'Day Brooder—E. F. Hodgson, Dover, Mass.

Brooder—Cyphers Incubator Company, New York City.

The Station receives in exchange for its bulletins and reports, the official agricultural publications of American Experiment Stations and State and National Departments of Agriculture, Horticulture and Dairying and those of Australia, Brazil, Canada, Chili and other foreign countries. Many private institutions, both at home and abroad, which issue publications bearing upon agricultural subjects, kindly send them to the Station Library.

In addition to the above, the following newspapers and other publications are kindly donated to the Station by the publishers:

Agricultural Epitomist, Indianapolis, Ind.
Agricultural Experiments, Minneapolis, Minn.
Agricultural Advertising, Chicago, Ill.
Agricultural Gazette, Sidney, New South Wales.
Agricultural Journal, Maritzburg, Natal.
American Cultivator, Boston, Mass.
American Fertilizer, Philadelphia, Pa.
American Gardening, New York City.
American Grange Bulletin, Cincinnati, O.
American Grocer, New York City.
American Miller, Chicago, Ill.
Baltimore Weekly Sun, Baltimore, Md.
Bangor Weekly Commercial, Bangor, Me.
Beet Sugar Gazette, Chicago, Ill.
Breeder's Journal, Himrods, N. Y.
Boletem de Agricultura, San Paulo, Brazil.
Canadian Horticulturist, Grimsby, Ont.
Chronique Agricole, Lausanne, Switzerland.
Country Gentleman, Albany, New York.
Dairy World, Chicago, Ill.
Detroit Free Press, Detroit, Mich.
Dietetic and Hygienic Gazette, New York City.
Elgin Dairy Report, Elgin, Ill.
Farmers Advocate, London, Ont.
Farmer's Guide, Huntington, Ind.
Farmer's Tribune, Des Moines, Iowa.
Farm News, Springfield, O.
Farm Home, Springfield, Ill.
Farm Journal, Philadelphia, Pa.
Farm-Poultry, Boston, Mass.
Farmer's Review, Chicago, Ill.
Farmer's Voice, Chicago, Ill.
Florist's Exchange, New York City.
Florist's Review, Chicago, Ill.
Forester, Princeton, N. J.
Flour and Feed, Waukegan, Ill.
Garden and Farm, Chicago, Ill.
Golden Egg, St. Louis, Mo.
Green's Fruit Grower, Rochester, N. Y.

Hoard's Dairyman. Fort Atkinson, Wis.
Herd Register, Peterborough, N. H.
Holstein Friesian Register, Brattleboro, Vt.
Homestead, Des Moines, Iowa.
Horticultural Visitor, Kinmundy, Ill.
Inland Poultry Journal, Indianapolis, Ind.
Jersey Bulletin, Indianapolis, Ind.
Journal of the Department of Agriculture, Perth, Western Australia.
Leader and Farm Journal, Fort Fairfield, Me.
Live Stock Journal, Chicago, Ill.
La Grele Station Viticole de Villefranche. (Rhone) France.
La Laiterie Belge, Enghein, Belgium.
Louisiana Planter, New Orleans, La.
Lewiston Weekly Journal, Lewiston, Maine.
Maine Farmer, Augusta, Me.
Massachusetts Ploughman, Boston, Mass.
Milk News, Chicago, Ill.
Mirror and Farmer, Manchester, N. H.
Modern Miller, St. Louis, Mo.
National Farmer and Stock Grower, National Stock Yards, Ill.
National Stockman & Farmer, Pittsburg, Pa.
New England Farmer, Boston, Mass.
New England Homestead, Springfield, Mass.
New York Farmer, Port Jervis, N. Y.
New York Produce Review, New York City.
North American Horticulturist, Monroe, Mich.
Northwestern Miller, Minneapolis, Minn.
Ohio Farmer, Cleveland, O.
Operative Miller, Chicago, Ill.
Oregon Agriculturist, Portland, Oregon.
Park & Cemetery, Chicago, Ill.
Practical Farmer, Philadelphia, Pa.
Practical Fruit Grower, Springfield, Mo.
Progressive Farmer, Newport, Vt.
Public Ledger, Philadelphia, Pa.
Reliable Poultry Journal, Quincy, Ill.
Ruralist, Gluckheim, Md.
Rural Californian, Los Angeles, Cal.

Rural New Yorker, New York City.
Rural Topics, Morgan City, La.
Southern Farm Magazine, Baltimore, Md.
Southern Farmer, New Orleans, La.
Southern Planter, Richmond, Va.
Strawberry Specialist, Kittrell, N. C.
Sugar Beet, Philadelphia, Pa.
Turf, Farm & Home, Waterville, Me.
Up-to-Date, Indianapolis, Ind.
Vick's Magazine, Rochester, N. Y.
Weekly Union, Manchester, N. H.
Western Fruit Grower, St. Joseph, Mo.
West Virginia Farm Review, Charleston, West Va.
The World, Vancouver, B. C.

METEOROLOGICAL OBSERVATIONS.

Lat. 44° 54′ 2″ N. Lon. 68° 40′ 11″ W. Elevation 150 feet.

The instruments used at this Station are the same as those used in preceding years, and include: Wet and dry bulb thermometers; maximum and minimum thermometers; thermograph; rain-gauge; self-recording anemometer, vane, and barometer. The observations at Orono now form an almost unbroken record of thirty-three years.

The winter of 1900-1 was remarkable for the early snow that fell on unfrozen ground and later accumulated to an unusual extent. The total fall, however, was only about five-sixths of the average, and the large amount on the ground at one time was due to the lack of the usual winter thaws. The absence of the frost in the ground not only assisted in the rapid disappearance of the snow in the spring, but allowed the water from the melting snow and ice to enter the ground instead of escaping into the streams. The spring rains were excessive, and had the ground been in its usual condition the damage from floods, though serious in some localities, would have been much greater.

The following notes are intended to apply to this particular locality. The year has been characterized by the unusual distribution of rain and snow. The average precipitation for April at this Station, as shown by thirty-three years' observation, is 2.9 inches, lower than that for any other month of the year. The fall on April last was nearly double this amount, 5.12 inches, the largest thus far recorded at Orono for this month. Reference to the table on page 191 shows that these conditions were general through a large part of the State. During May, June and July the aggregate fall was four inches below the normal, and crops in some sections suffered severely. The usual heavy rains of November were lacking, and the deep snow that fell on November 14 found but little water in the ground and many low wells, conditions which were relieved by the thaw and rains of December 14 and 15. The total precipitation for December, (rain and melted snow) was 7.94 inches, double the usual amount. Extreme temperatures were noted in July, the thermometer on July 16 rising to 100°, dropping to 40° on the morning of July 25, a range of 60° in nine days.

METEOROLOGICAL SUMMARY FOR 1901.

Observations Made at the Maine Experiment Station.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Mean.	Total.
Highest barometer	30.43	29.89	30.31	30.30	30.12	30.07	30.06	30.15	30.27	30.42	30.20	30.35	30 22	......
Lowest barometer	28.77	29.02	29.13	29.47	29.37	29.52	29.55	29.61	29.46	29.12	28.91	29.08	29.25	......
Mean barometer	29.81	29.44	29.71	29.90	29.73	29.76	29.76	29.88	29.85	29.87	29.71	29.83	29.17	......
Highest temperature	42°.0	40°.0	49°.0	76°.0	85°.0	91°.0	100°.0	86°.0	89°.0	71°.0	58°.0	55°.0	....	......
Lowest temperature	—20°.0	—18°.0	—13°.0	25°.0	32°.0	38°.0	40°.0	43°.0	28°.0	20°.0	—8°.0	—17°.0	....	......
Mean temperature	15°.03	14°.20	27°.74	44°.73	53°.90	63°.80	68°.60	66°.65	59°.50	47°.64	29°.10	23°.29	42.81	......
Mean temperature for 33 years	16°.01	19°.13	27°.54	40°.54	52°.34	62°.09	67°.10	65°.13	57°.17	46°.05	34°.17	20°.73	42.33	......
Total precipitation in inches	4.33	1.95	5.46	5.12	2.07	1.79	2.75	3.76	4.22	4.12	2.54	7.94	....	46.05
Mean precipitation for 33 years	4.36	4.07	4.29	2.90	3.58	3.55	3.31	3.57	3.39	4.07	4.37	3.84	....	45.30
No. of days with precip. of .01 in. or more	12	5	11	9	13	9	11	8	8	8	9	12	....	115
Snow fall in inches	25.5	19.5	11.7	....	....	....	....	....	....	trace	19 8	21.5	....	98.0
Average snow fall for 33 years	23.3	21.6	16.9	5.6	....	....	....	....	....	.9	8.2	16.9	....	93.4
Number of clear days	10	12	12	10	7	12	11	13	13	11	7	11	....	129
Number of fair days	6	6	1	0	8	7	5	6	7	10	6	4	....	66
Number of cloudy days	15	10	18	20	16	11	15	12	10	10	17	16	....	160
Total movement of wind in miles	5767	7356	6214	5936	6253	4868	4440	4936	5315	5483	5005	6007	....	......

Monthly and Annual Precipitation (as rain) for the Year 1901.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
Bar Harbor	4.83	1.63	10.30	5.81	2.74	3.23	1.63	3.00	3.28	3.45	3.50	9.78	53.18
Belfast	4.51	2.16	7.80	6.49	2.09	.88	3.10	3.64	2.50	3.53	3.11	9.74	49.55
Bemis	3.60	1.20	5.90	7.14	....	1.66	5.46	2.28	1.87	2.75	3.70	2.20	37.76
Carmel	6.67	1.90	3.75	4.92	2.95	1.95	3.00	2.91	3.58	3.56	2.40	....	37.59
Cornish	3.03	1.26	5.70	11.52	8.40	1.79	6.25	9.00	3.06	3.47	2.00	7.52	63.00
Eastport	4.80	1.65	4.88	5.58	3.29	5.45	.91	2.48	2.92	1.72	1.91	6.02	41.61
Fairfield	2.74	1.95	5.22	3.96	2.35	1.64	2.99	3.39	3.79	2.77	2.19	7.98	40.97
Farmington	3.27	1.04	4.54	6.88	3.95	3.47	4.22	3.45	2.25	3.03	2.10	8.97	47.17
Flagstaff	2.20	1.50	2.75	7.83	2.34	4.58	5.01	4.95	1.65	2.40	2.20	4.88	42.29
Gardiner	3.78	1.76	6.25	6.43	3.92	1.36	4.26	5.54	2.08	4.18	2.41	9.43	51.30
Kineo	2.65	1.80	1.45	4.85	.75	6.55	1.95	2.55	.94	2 26	2.70	7.40	35 85
Lewiston	3.19	1.15	5.14	8.16	5.77	1.12	4.25	4.75	1.75	3.33	2.20	7.59	48.40
Mayfield	2.60	1.20	5.55	6.33	2.26	2.94	5.40	5.25	2.63	3.43	2.44	8.63	48.64
North Bridgton	... ...	1.70	4.80	7.60	7.56	3.91	5.13	5.46	2.55	3.24	2.14	5.75	49.84
Orono	4.33	1.95	5.46	5.12	2.07	1.79	2.75	3.76	4.22	4.12	2.54	7.94	46.04
Portland	3.34	1.68	6.43	7.47	7.17	.93	4.21	3.26	2.18	3.12	1.89	7.14	48.82
Rumford Falls	2.77	.74	4.05	7.91	6.54	3.84	4.91	3.47	2.59	3.48	1.76	5.53	47.59

With the exception of readings from the Orono station, the above table is compiled from the monthly bulletins of the U. S. Weather Bureau.

REPORT OF THE TREASURER.

Maine Agricultural Experiment Station in account with the United States appropriation, 1900-1901.

Dr.

To receipts from the Treasurer of the United States as per appropriation for the fiscal year ending June 30, 1901, as per act of Congress approved March 2, 1887	$15,000 00

Cr.

By salaries:		
(a) Director and administration officers	$2,451 24	
(b) Scientific staff	4,044 49	
(c) Assistants to scientific staff	1,373 94	
(d) Special and temporary services	32 67	
Total		7,902 3
Labor:		
(a) Monthly employees	$751 13	
(b) Daily employees	943 85	
(c) Hourly employees	61 77	
Total		1,756 75
Publications		286 77
Postage and stationery		275 01
Freight and express		219 48
Heat, light and water		801 54
Chemical supplies:		
(a) Chemicals	297 21	
(b) Other supplies	144 21	
Total		441 42
Seeds, plants and sundry supplies:		
(a) Agricultural	$106 42	
(b) Horticultural	130 28	
(c) Botanical	2 96	
(e) Miscellaneous	158 74	
Total		398 40
Fertilizers		128 33
Feeding stuffs		991 27
Library		141 15
Tools, implements and machinery		160 48
Furniture and fixtures		99 08
Scientific apparatus		291 83

Live stock:		
(a) Horses	$75 00	
(b) Cattle	127 50	
(e) Poultry	14 70	
(f) Sundries	228 83	
Total		446 03
Traveling expenses		$289 23
Buildings and repairs		370 89
Total		$15,000 00

ISAIAH K. STETSON, *Treasurer.*

I, the undersigned, duly appointed Auditor of the Corporation, do hereby certify that I have examined the books of the Maine Agricultural Experiment Station for the fiscal year ending June 30, 1901, that I have found the same well kept and classified as above, and that the receipts for the year from the Treasurer of the United States are shown to have been $15,000.00, and the corresponding disbursements, $15,000.00; for all of which proper vouchers are on file and have been examined by me and found correct.

And I further certify that the expenditures have been solely for the purposes set forth in the act of Congress approved March 2, 1887.

A. W. HARRIS, *Auditor.*

Maine Agricultural Experiment Station in account with "General Account" for the year ending June 30, 1901.

DR.

To balance from 1900–1901	$636 00	
Sales of produce, etc	2,714 36	$3,350 36

CR.

By labor	$967 07	
Feeding stuffs	288 04	
Contingent (chiefly insurance and water supply construction)	872 20	
Buildings and repairs	730 00	
Balance to 1900-1901 account	493 05	$3,350 36

Maine Agricultural Experiment Station in account with Creamery Inspection for the year ending December 31, 1901.

DR.

To fees for calibrating glassware	$84 65

CR.

By expense calibrating glassware	$84 65

Maine Agricultural Experiment Station in account with Fertilizer Inspection for the year ending December 31, 1901.

DR.

To balance from account of 1900	$247 37	
Receipts for licenses	2,720 00	
		$2,967 37

CR.

By collection and analyses of samples	$2,141 05	
Executive and office expenses	700 00	
Balance to account of 1902	126 32	
		$2,967 37

Maine Agricultural Experiment Station in account with Feed Inspection for the year ending December 31, 1901.

DR.

To receipts for inspection tags, 1901	$1,408 60	
Balance to account of 1902	834 54	
		$2,243 14

CR.

By balance carried from 1900 account	$666 53	
Collection and analyses of samples	553 71	
Tags	298 74	
Executive and office expenses	700 00	
Interest	24 16	
		$2,243 14

INDEX TO EXPERIMENT STATION REPORT.

PAGE
Acknowledgments 185
Acorns, analyses 108
Acorn bread, analysis 108
Adulterated brans 38
Alligator pear, analysis 111
Animal meal, analyses 31
Announcements 7
Army rations 100
Arsenate of lead 178
Arsenite of copper 178
Ashes, leached, analyses 68
    manurial value 66
    mechanical effect on soils 70
    of various woods, analyses 67
    unleached, analyses 68
Automatic sprayers for potatoes 62
Avecado, analysis of fruit 111

Beef tea, analysis 101
Blueberry barrens 125
    financial importance 129
    industry 124
    picking the fruit 127
    propagation 120
    rake 127
    seedlings, method of starting 121
Bone as manure 84
    composition 87
    meal 85
    meal and wood ashes 87
    steamed 86
Bordeaux mixture and Paris green 177
    boxal and Lion Brand 56
    cost 57
    preparation 49, 62
    ready made vs. freshly prepared 56
Boxal 56

PAGE

- Brans, adulterated 38
- Bulletins, newspaper 177

- Cherry, surinam, analysis 110
- Chestnuts, Italian, analyses 109
- Chicago gluten meal 36
- Chinch bug, description 182
  - methods of combatting 183
- Colorado potato beetle 177
- Condensed foods, analyses 101
- Contents, table of 5
- Corn and oat feed, analyses 31
  - chops 38
- Correspondence 8
- Cotton seed meal 36
  - meal, analyses 27, 29
  - meal, low grade 180
- Council, Station 4
- Cream gluten 37

- Diet, adequate 105
- Dietaries, American and European 105
- Digestibility of oat products 23
- Digestible nutrients of oat products 24
- Dried eggs 93
- Duck eggs, analyses 91

- Early blight of potatoes 59
- Eel grass, analyses 81
- Egg substitutes 93
- Eggs, analyses 91
  - preparation for analysis 92
  - weight 90
- Emergency rations 100
- Eugenia Michelii, analysis of fruit 110

- Feeding stuffs, analyses 27
  - inspection 25
    - law 25, 180
    - tax and tag 25
- Fertilizer analyses 43, 163
  - inspection 42, 161
  - law, chief provisions 48
- Fertilizers, guarantees and analyses compared 170
- Flours, prepared, analyses 96
- Food, man's daily needs 104
  - materials, analyses 89
- Foods, condensed 100
- Fucus evanescens 79
  - vesiculosis 79

PAGE

Fungicides, commercial 50
 cost 57
 for potatoes, application 50
 for potatoes, experiments 49
 for potatoes, field notes 52
 ready made vs. freshly prepared 56
Fungus diseases of the potato 59

Germ oil cake 37
 meal, analyses 29
Gluten foods, analyses 99
 meal, analyses 29
 meals and feeds 36
Goose eggs, analyses 91
Guinea fowl eggs, analyses 91

Hibiscus Sabdariffa, analysis of fruit 112

Insect enemies of the potato 58
Insecticides for potato beetle 177
Inspections 7
Italian chestnuts, analyses 109

Jamaica Sorrel, analyses 112

Kelp, analyses 81
King gluten meal 37

Late blight of potatoes 59
Letter of transmittal 3
Lime used with insecticides 178
Linseed meal, analyses 29
Lion Brand Bordeaux mixture 56

Malted nuts, analysis 107
Manure, influence on oats 9
Meat meal, analyses 31
Meteorological observations 189
Mixed feeds 38
 inspection 39
Muck 71
 analyses 73
 ash, analyses 75
 organic matter 75
Mussel mud, analyses 74

Newspaper bulletins 177
Newspapers received by the Station 186

Oat and pea hay 18
 pea hay, analyses 21
 vetch hay, analysis 21

PAGE

Oat, by products 19
  feeds 38
  hay, analyses 21
  products, analyses 21
    digestibility 23
    digestible nutrients 24
  straw, analysis 21
Oats, analyses 15
  as grain and fodder 9
  as hay 16
  as silage 18
  influenced by manure 9
  Maine grown 12
  yield per acre 14

Pancake flours, analyses 96
Paris green and Bordeaux mixture 177
Pea and oat hay 18
  flour, analysis 98
Peat 71
  analyses 73
Persea gratissima, analysis of fruit 111
Potato beetle, poisons for 177
  blight or rot 59
  enemies, how to fight 58
  leaf diseases 60
  scale 59
Potatoes, application of fungicides 52
  experiments with fungicides 49
  methods of spraying 61
  sprayed, yield 55
  when and how to spray 64
Precipitation for the year 191
Prepared flours, analyses 96
Publications of Station 8
  received by the Station 186

Quercus Emoryi, analysis of acorn 108
  lobata, analysis of acorn 108

Rain fall for 1901 191
Ration cartridges 101
Ribbon weed, analyses 81
Rockweed, analyses 80
  as cattle food 79
Roselle, analysis 112
Royal Oat Feed, analysis 21

Sea lettuce, analysis 80

PAGE

Seaweed, analyses 80
    as cattle food 79
    manurial value 78
Self-raising flours, analyses 96
Sheep and seaweed 79
Silage, oat 18
    pea and oat 19
Sphagnum, decomposed, analysis 74
Sprayed potatoes, yield 55
Spraying formulas for potatoes 62
    potatoes, apparatus 61
        cost 57
        methods 61
        when and how to do it 64
        with fungicides 49
Staff, Station 4
Station, aim of 7
    council 4
    publications 8
    staff 4
Surinam cherry, analysis 110

Treasurer's report 192
Tropical fruit 109
Turkey eggs, analyses 91

Vaccinium, albino forms 130
    American species 115, 154
    bibliography 155
    botanical notes 132
    classification, horticultural 135
        natural 133
    characters of the genus 132
    common names 113
    cultivation, history of 122
    distribution of species 114
    historical notes 115
    important species 137
    key to the natural groups 133
    names, common 113
    natural groups of species 133
    species description of 137, 154
        arboreum 152
        atrococcum 150
        caespitosum 142
        Canadense 145
        corymbosum 149
        crassifolium 151

PAGE

Vaccinium, species, erythrinum 152
  erythrocarpon 140
  hirsutum 146
  macrocarpon 138
  Myrsinites 141
  myrtilloides 147
  Myrtillus 142
  nigrum 144
  nitidum 140
  ovalifolium 147
  ovatum 152
  Oxycoccus 137
  parvifolium 139
  Pennsylvanicum 143
  stamineum 153
  uliginosum 151
  vacillans 141
  virgatum 148
  Vitis-Idaea 138
  use for ornamental planting........ 119
  uses of the fruit........ 116
Vetch and oat hay, analysis........ 21

Weather observations 189
Wheat bran and middlings........ 39
  offals 39
Wood ashes 66